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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,714	07/03/2003	Vincent Sewalt	4532670/2971 (KEM 76)	5003
26386 7590 01/25/2008 DAVIS, BROWN, KOEHN, SHORS & ROBERTS, P.C. THE FINANCIAL CENTER 666 WALNUT STREET SUITE 2500 DES MOINES, IA 50309-3993			EXAMINER SAYALA, CHHAYA D	
			ART UNIT 1794	PAPER NUMBER
			MAIL DATE 01/25/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/613,714		SEWALT ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	C. SAYALA		1794	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the specification at page 1, lines 9-12 or Tjardes et al. ("Feeding Corn Distiller's Co-Products to Beef Cattle", Animal and Range Sciences, pages 1-5, Aug 2002), in view of Semple et al ("Mycotoxin prevention and control in foodgrains", FAO, 1989, 10 pages, downloaded from <http://www.fao.org/docrep/X5036E/X5036E00.htm>) and further in view of Harris (US Patent 2799583) and Vinelli (US Patent 6610341) or further in view of Vidal et al. (US Patent 4335148).

The steps (a) and (b) of claim 1, require producing ethanol from corn using wet or dry milling and generating a proteinaceous by-product, steps that were already well established in the art at the time the invention was filed. In support of this statement see specification at page 1, lines 9-10. (In fact, applicant was not the first to discover that the proteinaceous material was prone to harden and cake. See the instant specification at page 1, lines 11-12). In addition to such disclosure, the Tjardes et al. publication shows both dry milling and wet milling, ethanol production

and furthermore, shows that these grains are susceptible to mold formation, see 'Storage considerations' page 4, col. 1, line 2. Semple et al. teach that molds pertaining to animal feeds and grains produce mycotoxins that include aflatoxins. See page 5, and page 9, which teach some chemical treatments that includes ammonia and bisulfites. Note too that the grains referred to in the reference, includes corn (see contents). The Harris patent teaches a reducing agent and urea in the amounts claimed for preserving animal feed during storage (col. 1, line 24). See the claims. Ensiled material would inherently contain proteinaceous material (see col. 1, line 47, which discloses legumes). Also see col. 2, lines 15-17; metabisulfite is a reducing agent. Since the steps are the same, the chemicals are the same, the proteinaceous animal feed stuff is the same, and the amounts are the same, then the degree of caking has been inherently decreased. The patent to Harris shows metabisulfite but not bisulfite or sulfite. Vinelli teaches preserving feed, from mold and yeast growth, known to cause caking, by treating the feed with sulfite, bisulfite, metabisulfite *or mixtures thereof*. Therefore to substitute bisulfite for the metabisulfite as functional equivalents and combine it with the sulfite would have been prima facie obvious. See the claims. Vidal also teaches that preserving grains such as corn from microbial growth, such as fungi and mold, can be achieved by using ammonia and sulfur dioxide (see col. 1, lines 50-55). See the prior art discussion of this patent that establishes that using reducing agents for preserving grains against microbial degradation was known, see cols. 1-4. Therefore, based on the information of Tjardes et al., it would have been obvious to prevent molding and

preserve the proteinaceous animal feed. At the time of filing it was known to measure the mycotoxin level or mycotoxin susceptibility level, (see "Mycotoxin and Mycotoxin Test Kits", PTO form 892 which substantiates such a statement) and therefore, it would have been obvious to determine amounts of these chemicals, based also on both Harris and Vidal indicating amounts of such preservatives in their disclosures.

2. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the specification at page 1, lines 9-12 or Tjardes et al. ("Feeding Corn Distiller's Co-Products to Beef Cattle", Animal and Range Sciences, pages 1-5, Aug 2002), in view of Semple et al. ("Mycotoxin prevention and control in foodgrains", FAO, 1989, 10 pages, downloaded from <http://www.fao.org/docrep/X5036E/X5036E00.htm>) and further in view of Harris (US Patent 2799583) and Vinelli (US Patent 6610341) or further in view of Vidal et al. (US Patent 4335148), as discussed above, taken with Weeks et al. (US Patent 3578460) and Slavtcheff et al. (US Pub. No. 2004/0219118) and WO 01/98509.

The primary references are as discussed above at paragraph 1 above, and teach a variety of reducing agents such as bisulfite and sulfite and compounds such as ammonia, ammonium salts and urea, but not reductants such as the enzymes listed at claim 6 or the antioxidants such as those listed in claim 8.

Weeks et al. teach treating proteinaceous materials, as claimed, and further defined at page 1 of the instant specification, lines 5-10, with keratinase enzyme and with reducing agents, which are "reductive type disulfide splitting" such as sulfite, mercaptoethanol, meta bisulfite, etc. Examples show the use of keratinase, with sulfite or mercaptoethanol in ratios 1:1 to 3:1. However, keratinase is a keratin degrading enzyme (hence its name) and is a known reducing agent that is capable of reducing disulfide linkages, as is sodium disulfide and dithioerythritol, as Slavtscheff et al., which reference has been relied on here only to show basic knowledge in the art: compounds that are known as reducing agents for disulfide linkages. See paragraph [0032]. WO 01/98509 teaches that like keratinase, thioredoxin and thioredoxin reductase are enzymes that also reduce disulfide bonds in proteins. See page 1. To replace or substitute any of these reducing agents, all intended for treating proteins, as in the primary references, partially or totally, with the reasonable expectation that they are just as useful as the reducing agents of Harris, would have been prima facie obvious.

3. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the specification at page 1, lines 9-12 or Tjardes et al. ("Feeding Corn Distiller's Co-Products to Beef Cattle", Animal and Range Sciences, pages 1-5, Aug 2002), in view of Semple et al. and further in view of Harris (US Patent 2799583) and Vinelli (US Patent 6610341) or further in view of Vidal et al. (US Patent 4335148), as discussed

above, taken with Hauck et al. (US Patent 4172148) and Simonsen et al. (US Pub. No. 2004/0033927).

The primary references are as discussed in the above paragraphs. They do not disclose BHA, BHT or propyl gallate. Hauck et al teaches "basic feed material conventionally used for nourishing ruminants animals" at col. 3, lines 30-65, wherein anti-oxidants such as BHT or propyl gallate are added together with soybean meal, urea, cereal grains etc. Simonsen et al. provide guidance as to the functional equivalence of sulfites, ascorbates, TBHQ, BHA, BHT and gallate, all materials that are reducing agents/oxidants. Then to combine similar compounds for the same purpose would have been prima facie obvious, and since Harris already provides guidance as to amounts of the reducing agent, to adopt the same for these functionally equivalent compounds too, would have been obvious to one of ordinary skill in the art at the time the invention was made. It is prima facie obvious to combine two compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the same purpose; the idea of using them flows logically from their having been individually taught in prior art. In re Kerkhoven, 205 USPQ 1069 (CCPA 1980).

4. Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the specification at page 1, lines 9-12 or Tjardes et al. ("Feeding Corn Distiller's Co-Products to Beef Cattle", Animal and Range Sciences, pages 1-5, Aug 2002), in view of Semple et al. and further in view of Harris (US Patent 2799583) and Vinelli (US Patent

6610341) or further in view of Vidal et al. (US Patent 4335148) taken with Loo et al. (US Patent 2825651).

The primary references are as described above. They do not disclose using an inert gas to maintain a reducing condition in the container. The above patent to Loo et al. shows processing food with inert gases, such as CO<sub>2</sub> and nitrogen, which perform the function of flushing out the container of O<sub>2</sub> after the use of sodium sulfite, a reducing agent; thus providing oxygen free packaging of dry products. See the claims, col. 1, line 40. It would have been obvious to treat the proteinaceous materials in the same manner after treating it with a reducing agent for the obvious benefit of maintaining a reducing condition for beneficial preservation.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over the specification at page 1, lines 9-12 or Tjardes et al. ("Feeding Corn Distiller's Co-Products to Beef Cattle", Animal and Range Sciences, pages 1-5, Aug 2002), in view of Semple et al. Semple et al. ("Mycotoxin prevention and control in foodgrains", FAO, 1989, 10 pages, downloaded from <http://www.fao.org/docrep/X5036E/X5036E00.htm>) and further in view of Harris (US Patent 2799583) and Vinelli (US Patent 6610341) or further in view of Vidal et al. (US Patent 4335148) taken with Weeks et al, WO 01/98509. and Simonsen et al. and Hauck et al.

The steps (a) and (b) of claim 1, require producing ethanol from corn using wet or dry milling and generating a proteinaceous by-product, steps that were already well established in the art at the time the invention was filed. In support of this statement see specification at page 1, lines 9-10. (In fact, applicant was not the first to discover that the proteinaceous material was prone to harden and cake. See the instant specification at page 1, lines 11-12). In addition to such disclosure, the Tjardes et al. publication shows both dry milling and wet milling, ethanol production and furthermore, shows that these grains are susceptible to mold formation, see 'Storage considerations' page 4, col. 1, line 2. Semple et al. teach that molds pertaining to animal feeds and grains produce mycotoxins that include aflatoxins. See page 5, and page 9, which teach some chemical treatments that includes ammonia and bisulfites. Note too that the grains referred to in the reference, includes corn (see contents). The Harris patent teaches a reducing agent and urea in the amounts claimed for preserving animal feed during storage (col. 1, line 24). See the claims. Ensiled material would inherently contain proteinaceous material (see col. 1, line 47, which discloses legumes). Also see col. 2, lines 15-17; metabisulfite is a reducing agent. Since the steps are the same, the chemicals are the same, the proteinaceous animal feed stuff is the same, and the amounts are the same, then the degree of caking has been inherently decreased. The patent to Harris shows metabisulfite but not bisulfite or sulfite. Vinelli teaches preserving feed, from mold and yeast growth, known to cause caking, by treating the feed with sulfite, bisulfite, metabisulfite *or mixtures thereof*. Therefore to substitute bisulfite for the

metabisulfite as functional equivalents and combine it with the sulfite would have been prima facie obvious. See the claims. Vidal also teaches that preserving grains such as corn from microbial growth, such as fungi and mold, can be achieved by using ammonia and sulfur dioxide (see col. 1, lines 50-55). See the prior art discussion of this patent that establishes that using reducing agents for preserving grains against microbial degradation was known, see cols. 1-4. Therefore, based on the information of Tjardes et al., it would have been obvious to prevent molding and preserve the proteinaceous animal feed. At the time of filing it was known to measure the mycotoxin level or mycotoxin susceptibility level, (see "Mycotoxin and Mycotoxin Test Kits", PTO form 892 which substantiates such a statement) and therefore, it would have been obvious to determine amounts of these chemicals, based also on both Harris and Vidal indicating amounts of such preservatives in their disclosures.

The above patents teach reducing agents, but not reductants such as the enzymes listed or the antioxidants claimed.

Weeks et al. teaches treating proteinaceous materials, as claimed, and further defined at page 1 of the specifications at page 1, lines 5-10, with keratinase enzyme *and with* reducing agents, which are "reductive type disulfide splitting" such as sulfite, mercaptoethanol, meta bisulfite, etc. Examples show the use of keratinase, and sulfite and mercaptoethanol in ratios 1:1 to 3:1. However, keratinase is a keratin degrading enzyme (hence its name) and is a known reducing agent that is capable of reducing disulfide linkages. WO 01/98509 teaches that like keratinase, thioredoxin and

thioredoxin reductase are enzymes that also reduce disulfide bonds in proteins. See page 1. To replace or substitute any of these reducing agents, all intended for proteins in the primary references, partially or totally, or to combine them, with the reasonable expectation that they are just as useful as the reducing agents of Harris would have been prima facie obvious. These references do not disclose BHA, BHT or propyl gallate. Hauck et al teaches "basic feed material conventionally used for nourishing ruminants animals" at col. 3, lines 30-65; wherein oxidants such as BHT or propyl gallate are added together with soybean meal, urea, cereal grains etc. Simonsen et al. provide guidance as to the functional equivalence of sulfites, ascorbates, TBHQ, BHA, BHT and gallate, all materials that are reducing agents/oxidants. Then to combine similar compounds for the same purpose would have been prima facie obvious, and since Harris already provides guidance as to amounts of the reducing agent to adopt the same would have been obvious to one of ordinary skill in the art at the time the invention was made.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-11, 29 have been considered but are moot in view of the new ground(s) of rejection. Although Harris does not teach the by-products, nonetheless when Harris teaches protein containing animal feed (contains legumes), and preserving such feed during storage, with a reducing agent and urea, then one skilled in the art who already knows that animal feed is susceptible to molds and yeast during storage, particularly the grains obtained as a by-product from ethanol

production, would have been motivated to use the same. With regard to the "purpose" of applicant's claimed invention, it is well established that assertion that examiner combines prior art references for purpose different from that envisioned by inventors does not warrant reversal of examiner's finding of obviousness". *Ex parte Raychem Corp.* 17 USPQ2d 1417

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Sayala whose telephone number is (571) 272-1405.

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The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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